March 14, 1967 B. WALKER 3,308,678

VEHICLE THROTTLE CONTROL

Original Filed Dec. 13, 1961

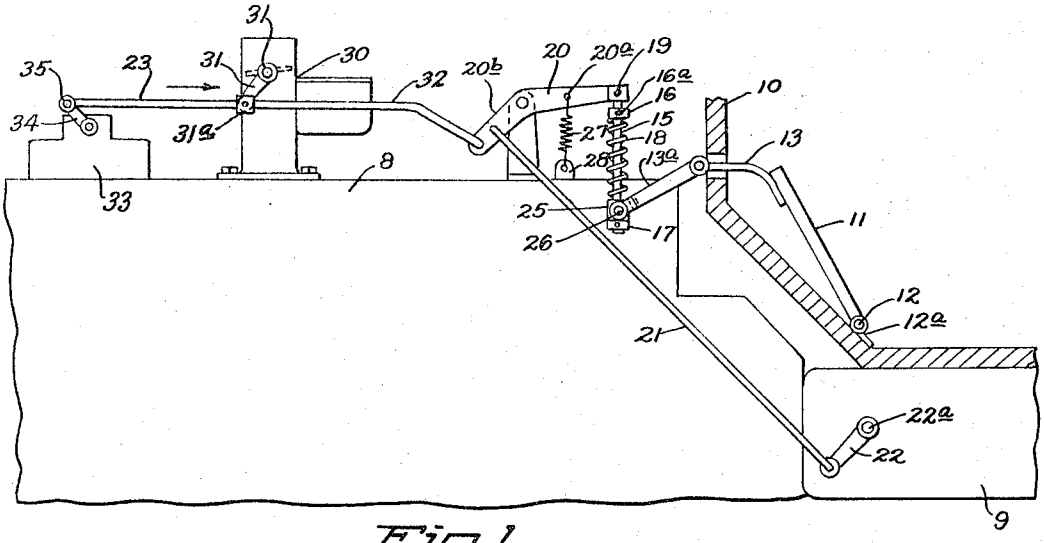


Fig. 1.

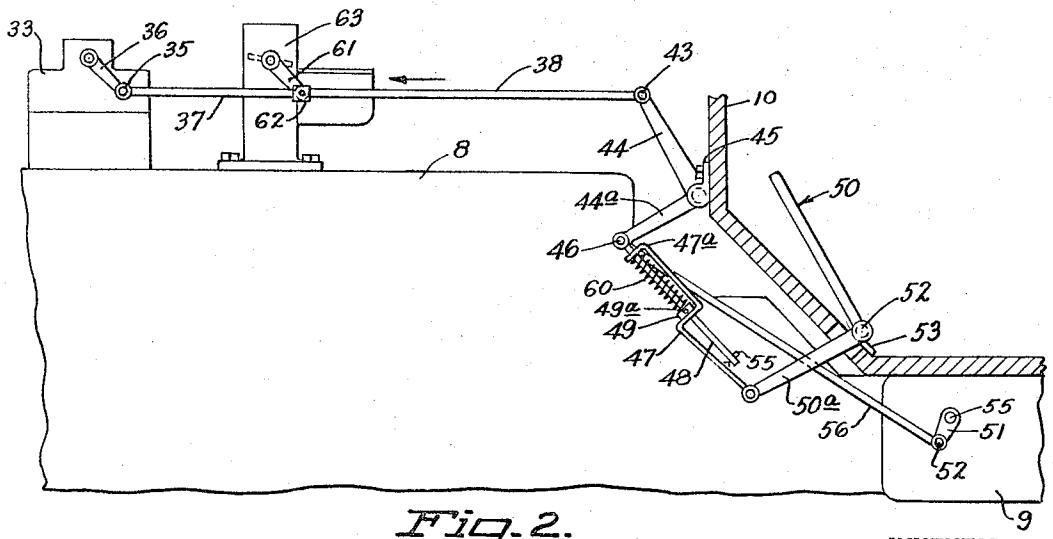


Fig. 2.

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VEHICLE THROTTLE CONTROL

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Continuation of application Ser. No. 159,091, Dec. 13, 1961. This application Sept. 2, 1965, Ser. No. 489,788
7 Claims. (Cl. 74—472)

This application is a continuation of my copending application, Ser. No. 159,091 now abandoned, filed Dec. 13, 1961.

This invention pertains to a throttle control for a vehicle involving a smog control type carburetor, such as is shown in issued U.S. Patent No. 2,809,632 to F. V. Hall, in which a soft link is necessary between the throttle pedal and the carburetor so that the resistance of the dash pot will not be overcome too vigorously by heavy foot pressure on the foot throttle. In vehicles involving an automatic transmission, a linkage between the automatic transmission shaft control and the position of the carburetor butterfly should be kept in a positive relationship independent of the variable length of the soft link portion of the throttle operating linkage. In order to accomplish this, this invention places the soft link between the foot throttle and the linkage between the throttle butterfly and the transmission shift mechanism so that the compression of the soft link does not change the mechanical relationship between the transmission shift and the throttle butterfly.

Other features of the invention will be more particularly pointed out in the accompanying specification and claims.

I have illustrated my invention in the attached drawings, in which:

FIG. 1 shows a side elevation, partly cut away, of a preferred form of the invention; and

FIG. 2 is a side elevation partly cut away, of an alternate form of the invention.

In all figures like reference numerals refer to corresponding parts.

In FIG. 1 I have shown a fire wall **10** which separates the engine from the driver's compartment, a foot throttle pivoted by pin **12** to bearing **12***a* secured to the fire wall or floor boards **10**. A pivoted rocker **13** bears on its right end, as viewed in FIG. 1, against the under side of the throttle pedal **11**. End **13***a* of rocker **13** has a forked end which carries pin **26** and block **25** supported between the forked ends of arm **13***a*. Smooth shaft **15** slides through block **25**. Shaft **15** carries collar **17** suitably secured to the lower end of rod **15**. Spring **18** is carried on the outside of rod **15** and butts at its lower end against block **25** and at its upper end against collar **16**, which is adjustable vertically on rod **15** by set screw **16***a*. Pin **19** connects the upper end of rod **15** in a swingable relation with rocker arm **20**. Spring **27** is secured to rocker arm **20** at hole **20***a* and to bracket **28** which is secured to the engine **8**. End **20***b* of rocker arm **20** pivotally supports rod **21** at the upper end of rod **21**. The lower end of rod **21** is secured to arm **22** of transmission **9**. Arm **22** controls the shifting of some of the ratios controlled by transmission **9** between engine **8** and the vehicle drive shaft which is not shown. Arm **22** is secured to rod **22***a* which enters the transmission and controls the shifting in a convention manner.

Another hole farther out in arm **20***b* supports throttle rod **32** at its right end, as viewed in FIG. 1. The left end of rod **32** is secured to the carburetor throttle arm **31** of carburetor **30** through block **31***a*. Block **31***a* is pivoted to butterfly shaft **31** and supports the left-hand end of rod **32**. A dash pot **33** may be a similar construction to that shown in my copending U.S. patent application, Ser. No. 183, 185 now Patent No. 3,216,692, issued Nov. 9,

1965, or constructed as a dash pot along the lines of that shown in FIG. 1 of Vanderpool No. 2,129,610, which made use of a straight or step piston as in FIG. 8 of Hall No. 2,809,632. Dash pot **33** carries arm **34** and pin **35** which supports the left end of rod **23**. The right end of rod **23** is pivotally supported on block **31***a*. When the driver suddenly accelerates by pressing throttle pedal **11** down to the floor, block **25** will ride up shaft **15** compressing spring **18**. Arm **20** will rotate counter-clockwise a partial revolution which would be resisted by throttle return spring **27** that is anchored at its upper end to hole **20***a* in arm **20**. Its lower end is secured to engine bracket **28**.

The motion of rod **23** to the right, as viewed in FIG. 1 (as a result of "flooring" throttle **11** suddenly) is restricted by the action of dash pot **33** which has control arm **34** extending therefrom. Pin **35** supports the left hand end of the tie link **23**. The right end of tie link **23** is supported in pivot block **31***a*. This resistance of dash pot **33** through its associated linkage allows throttle shaft **31** to move at a controlled rate which is considerably longer than instantaneous movement and at the same time maintains the mechanical relationship between arm **31** and arm **22** of the vehicle transmission. When the driver tries to "hot rod" his car by tromping up and down on the throttle in rapid succession, soft link **15** will compress during one down stroke and yield very rapidly in the opposite direction of throttle motion so as to prevent throttle butterfly pumping and maintain the mechanical relationship between the throttle butterfly and the transmission shift while still allowing the throttle pedal **11** to be "pumped." Thus, a very rapid flooring of the throttle pedal **11** will result in a rapid compression of spring **18** and only a relatively slower motion of the butterfly in the carburetor **30**, compared to what there would have been if no soft link were used.

In FIG. 2 throttle pedal **50** is pivoted on rod **52** which is carried in bearings **53** mounted on the vehicle floor boards **10**. As throttle pedal **50** is depressed, arm **50***a* moves downward pulling on crooked arm **47**. Spring **60** is mounted over rod **48**. Spring **60** is mounted over rod **48** which is slidably mounted through holes in end **47***a* and the parallel center portion of crooked arm **47**. Collar **49** is secured to rod **48** by a set screw or pin **49***a*. A cotter pin **55** goes through the lower end of rod **48** so that the lower end cannot pull through the hole in the center portion of crooked arm **47**. Pin **46** connects rod **48** to arm **44***a* of bell crank **44**. Pin **43** connects rod **38** to block **62** on butterfly arm **61** of carburetor **63**. Tie rod **37** connects block **62** to arm **36** of dash pot **33** by pin **35**. When foot pedal **50** is suddenly "floored," arm **50***a* pulls on crooked link **47** which compresses spring **60** between collar **49** and end **47***a* of crooked arm **47** as crooked arm **47** moves down rapidly.

The push spring **60** on collar **49** pulls on bell crank **44** in a counter-clockwise direction. The resistance to rapid motion offered by dash pot **33** is transmitted by rods **37** and **38** to bell crank **44**. After foot pedal **50** is floored and spring **60** compressed, spring **60** expands as rapidly as the dash pot **33** will allow and such expansion of spring **60** results in opening of throttle arm **61** at a prescribed rate while still maintaining the relationship between carburetor throttle arm **61** and transmission arm **51** regardless of the position of throttle pedal **50**. This is due to tie link **56** which connects pin **46** to pin **52** at the end of transmission arm **51** which is secured to transmission shift **55**. By this means the linkage between the transmission arm **51** and the throttle butterfly control arm **61** is unaffected by the compression of spring **60** in the soft link between arm **50***a* and pin **46**.

To those skilled in the art to which this invention relates many changes in construction and widely differing em-

bodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and description herein are purely illustrative and are not intended to be in any sense limiting.

I claim:

1. A throttle control linkage adapted to be used with a vehicle having an automatic transmission with a shift control lever and a carburetor having a throttle and a throttle control device, said throttle control linkage comprising a first linkage means adapted to be connected to said shift control lever and said throttle control device, a throttle control foot pedal, a second linkage means connected to said foot pedal and to said first linkage means at a point intermediate said throttle control device and said shift control lever, a dash pot operatively connected to said first linkage means for delaying the opening movement of said carburetor throttle when said pedal is moved suddenly to open the throttle, said second linkage means including a soft link, said soft link being operatively interposed in said second linkage means between said foot pedal and said first linkage means whereby said foot pedal can be suddenly fully depressed while said dash pot resistance to sudden motion will delay the throttle opening and said first linkage means will maintain the relationship between the throttle control device and said automatic transmission shift control lever independently of the changes in relationship between the position of said foot pedal and the position of said throttle control device.

2. A structure as defined in claim 1, said first linkage means including a rigid member adapted to be attached to said throttle control device, said second linkage means including a rigid member operatively connected to said foot pedal and said first linkage means.

3. A structure as defined in claim 1 said first linkage means including a rigid rod with a longitudinal motion to control the opening and closing of said throttle, said second linkage means being connected to said rod to transmit motion from said foot pedal to said throttle control device and said automatic transmission shift control lever.

4. A structure as defined in claim 1 said first linkage means comprising a plurality of connected links, said second linkage means comprising a plurality of connected links, one of said links being common to said first linkage means and also to said second linkage means.

5. A structure as described in claim 1, a bell crank, said first linkage means including said bell crank, said second linkage means including said same bell crank.

6. A throttle control linkage adapted to be used with a vehicle having an automatic transmission with a shift control device, and a carburetor having a throttle control device, said throttle control linkage comprising a first linkage means adapted to be conected to said shift control device and said throttle control device, a throttle control foot pedal, a second linkage means connected to said foot pedal and said first linkage means at a point intermediate said throttle control device and said shift control device, a dash pot operatively connected to said first linkage means, said second linkage means including a soft link, said soft link interposed in said second linkage means whereby said foot pedal can be suddenly fully depressed while said dash pot resistance to sudden motion will delay the throttle opening and said second linkage means will maintain the relationship between the throttle control device and said automatic transmission shift control device independently of the changes in relationship between the position of said foot pedal and the position of said throttle control device.

7. A throttle control linkage for use with a vehicle having an automatic transmission with a shift control lever and a carburetor having a throttle control lever comprising, a first linkage means connecting said levers and a manual control means operatively connected to said throttle control lever, said manual control means comprising a pedal, a second linkage means operatively connected to said throttle control lever and said pedal and further comprising a time delay means operatively connected to said manual control means whereby a fast full opening movement of said pedal will result in a slower delayed rate of opening movement of said throttle control lever.

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